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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,790	10/23/2003	Joseph D. Coughlan III	085.10784-US(02-609)	7184
34704 7590 09/05/2007 BACHMAN & LAPOINTE, P.C. 900 CHAPEL STREET SUITE 1201 NEW HAVEN, CT 06510			EXAMINER KIM, TAE JUN	
			ART UNIT 3746	PAPER NUMBER
			MAIL DATE 09/05/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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# Office Action Summary

Application No.	Applicant(s)	
10/691,790	COUGHLAN ET AL.	
Examiner	Art Unit	
Ted Kim	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 07/12/2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 9-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 15-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 7, 8, 15, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over DuBell et al (5,758,503) in view of optionally Snyder (2002/0116929). DuBell et al teach a gas turbine engine combustor comprising: an inboard wall; an outboard wall; and a forward bulkhead extending between the inboard and outboard walls [inherent components of the annular combustor, see col. 4, lines 1-8, alternately, see the Snyder reference] and cooperating therewith to define a combustor interior volume, wherein, at least a first wall of said inboard and outboard walls comprises: an exterior shell 14 and an interior heat shield 12 comprising a plurality of leading panels adjacent the bulkhead, each panel 12 having: an interior surface; an exterior surface; a perimeter having leading (near 26) and trailing (near 28) edges and first and second lateral edges 30; a plurality of cooling gas passageways 38 having inlets on the panel exterior surface and outlets on the panel interior surface; and a rail 26, protruding from the exterior surface and recessed from the leading edge along a majority of the leading edge; wherein the rail contacts the shell 14; wherein the first wall is the outboard wall; wherein the rail is a perimeter rail

Art Unit: 3746

having portions along the first and second lateral edges 30 and trailing edge 28; wherein the bulkhead comprises a plurality of heat shield panels, each having a portion extending adjacent a leading edge portion of at least one of the interior heat shield panels. These heat shield configurations are applied to all the heat shield elements including the leading panels, there being no teaching to the contrary. DuBell et al do not teach the ranges of the rail, i.e. the rail being recessed by 3-10 mm from the leading edge, the rail being recessed along the entire front edge by at least 3.5 mm; wherein there is a gap between the exterior surface and the shell having a height of 1-3 mm nor the bulkhead comprises a plurality of heat shield panels, each having a portion extending adjacent a leading edge portion of at least one of the interior heat shield panels. However, these ranges are regarded as an obvious matter of finding the workable ranges in the art. It would have been obvious to one of ordinary skill in the art to employ the claimed ranges, as an obvious matter of finding the workable ranges in the art. DuBell et al do not teach the outer and inner wall & panels have similar cooling structure. Snyder teaches that it is old and well known in the annular combustor art to make the inner wall and panel 80 and outer wall and panel 46 have similar cooling (col. 3, lines 13+). It would have been obvious to one of ordinary skill in the art to apply the teachings of DuBell et al. to both the outer and inner wall panels, as taught by Snyder, as the typical cooling arrangement used in the art for the annular combustor wall and panels. Snyder also teaches the bulkhead comprises a plurality of heat shield panels 80, each having a portion extending adjacent a leading edge portion of at least one of the interior heat shield panels, in order

to provide thermal protection for the bulkhead. It would have been obvious to one of ordinary skill in the art to employ a plurality of heat shield panels for the bulkhead, each having a portion extending adjacent a leading edge portion of at least one of the interior heat shield panels, in order to provide thermal protection for the bulkhead.

3. Claims 1-8, 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pidcock et al (6,408,628) in view of Halila (5,363,643). Pidcock et al teach a gas turbine engine combustor comprising: an inboard wall 21; an outboard wall 22; and a forward bulkhead (unlabeled, but contains the fuel injector 25 at its downstream end) extending between the inboard and outboard walls and cooperating therewith to define a combustor interior volume, wherein, at least a first wall of said inboard and outboard walls comprises: an exterior shell; and an interior heat shield comprising a plurality of leading panels adjacent the bulkhead, each panel 29A, 29B having: an interior surface; an exterior surface; a perimeter having leading and trailing edges and first and second lateral edges; a plurality of cooling gas passageways (46, 46A, 146) having inlets on the panel exterior surface and outlets on the panel interior surface; and a rail 144, protruding from the exterior surface and recessed from the leading edge along a majority of the leading edge; wherein the rail contacts the shell; wherein the first wall is the outboard wall; wherein the first wall is the outboard wall and wherein the inboard wall comprises: an exterior shell; and an interior heat shield 29A, 29B comprising a plurality of panels having: an interior surface; an exterior surface; a perimeter having leading and trailing edges and first and second lateral edges; a plurality of cooling gas passageways having

inlets on the panel exterior surface and outlets on the panel interior surface; and a rail, protruding from the exterior surface and recessed from the leading edge along a majority of the leading edge; wherein the shell has a plurality of apertures 140, positioned to direct cooling air against the panel exterior surface between the leading edge and the rail 144 (see Fig. 10); wherein the apertures are positioned to preferentially direct said cooling air along areas circumferentially aligned with fuel injectors 25; wherein the bulkhead comprises a plurality of heat shield panels, each having a portion extending adjacent a leading edge portion of at least one of the interior heat shield panels. The configuration of the leading panel 40A is the same as that of the downstream panel 40A. Pidcock et al teach the rail has a trailing edge 148 but does not teach the use of side edges. Pidcock et al do not teach the ranges of the rail, i.e. the rail being recessed by 3-10 mm from the leading edge, the rail being recessed along the entire front edge by at least 3.5 mm; wherein there is a gap between the exterior surface and the shell having a height of 1-3 mm. However, these ranges are regarded as an obvious matter of finding the workable ranges in the art. It would have been obvious to one of ordinary skill in the art to employ the claimed ranges, as an obvious matter of finding the workable ranges in the art.

In an alternate interpretation, the pedestals 45 projecting from the are in rows parallel to the rail 144 in Fig. 10 and very near the leading edge. These serve to increase the heat exchange area (col. 4, lines 53-55). Halila, see Fig. 16, teaches rails 100a which are near the leading edge (72) and parallel to the other rails 100a. These rails also serve to function to increase the heat exchange area (col. 11, lines 40-57). It would have been

Art Unit: 3746

obvious to one of ordinary skill in the art to replace the pedestals near the leading edge with rails, as equivalent structures in the art, and thus would appear to be in the claimed range. Alternately, these ranges are regarded as an obvious matter of finding the workable ranges in the art. It would have been obvious to one of ordinary skill in the art to employ the claimed ranges, as an obvious matter of finding the workable ranges in the art. Halila further teaches the rails on the rail is a perimeter rail having portions along the first and second lateral edges 70a, 70b and trailing edge 70d and an upstream recessed portion (see Fig. 20, the upstreammost rail downstream of 70c – compare with rails 100a in Fig. 16); wherein the portions along the first and second lateral edges and the trailing edge are not recessed from the first and second lateral edges and trailing edge, respectively. These rails provide for strengthening and sealing. It would have been obvious to one of ordinary skill in the art to employ side rails, connecting the leading edge and trailing edge rails, as taught by Halila, in order to provide strengthening and/or sealing.

4. Claims 1-8, 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pidcock et al (6,408,628) in view of Halila (5,363,643), as applied above, and further in view of Snyder (2002/0116929). Pidcock et al do not teach the bulkhead comprises a plurality of heat shield panels, each having a portion extending adjacent a leading edge portion of at least one of the interior heat shield panels. Snyder teaches the bulkhead comprises a plurality of heat shield panels 80, each having a portion extending adjacent a leading edge portion of at least one of the interior heat shield panels, in order to provide

thermal protection for the bulkhead. It would have been obvious to one of ordinary skill in the art to employ a plurality of heat shield panels for the bulkhead, each having a portion extending adjacent a leading edge portion of at least one of the interior heat shield panels, in order to provide thermal protection for the bulkhead.

***Response to Arguments***

5. Applicant's arguments with regard to the amended claims filed 07/12/2007 have been fully considered and distinguished from the Sandelis reference but they are not persuasive with regard to the remaining references applied above.

6. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the holes 150 being in groups, the wraparound effect) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

7. The argument that the applied references "teach away" from the claimed subject matter is not persuasive. A reference will teach away only if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the results sought by the inventor. *In re Gurly*, 27 F.3d 551, 553, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994). From a review of the disclosures of the applied references, it is clear that these references do not "teach away" from the claimed invention, since none of their disclosures teaches, either expressly or impliedly, that it is undesirable to combine the



annular combustor panel structure of Dubell et al with general annular combustor panel arrangement of Snyder. Furthermore, Dubell et al clearly illustrates one panel and all the other panels for the annular combustor are substantially identical, including the leading panels.

8. Applicant's arguments concerning Pidcock et al and Halila are not persuasive and not well taken arguing that the combination is conclusory. The following analysis was done in the previous office action and maintained above.

"In an alternate interpretation, the pedestals 45 projecting from the are in rows parallel to the rail 144 in Fig. 10 and very near the leading edge. These serve to increase the heat exchange area (col. 4, lines 53-55). Halila, see Fig. 16, teaches rails 100a which are near the leading edge (72) and parallel to the other rails 100a. These rails also serve to function to increase the heat exchange area (col. 11, lines 40-57). It would have been obvious to one of ordinary skill in the art to replace the pedestals near the leading edge with rails, as equivalent structures in the art, and thus would appear to be in the claimed range."

Hence, the prior art clearly teach that the rails and pedestals both serve the same purpose. While, the rails may also provide an additional structural purpose, the rails are deemed equivalent for their heat exchange properties.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

#### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Ted Kim whose telephone number is 571-272-4829. The Examiner can be reached on regular business hours before 5:00 pm, Monday to Thursday and every other Friday.

The fax number for the organization where this application is assigned is 571-273-8300.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ehud Gartenberg, can be reached at 571-272-4828. Alternate inquiries to Technology Center 3700 can be made via 571-272-3700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). General inquiries can also be directed to the

Application/Control Number: 10/691,790

Page 10

Art Unit: 3746

Patents Assistance Center whose telephone number is 800-786-9199. Furthermore, a variety of online resources are available at <http://www.uspto.gov/main/patents.htm>

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